

WE CLAIM:

1. A link chain having an inner side and an outer side and comprising:
a plurality of pairs of neighboring composite links, the links of each pair being pivotable relative to each other and each link including a stack of elongated plates; and
a plurality of coupling units, one for each pair of links and each pivotably connecting the respective pair of links to each other, each of said units including at least two adjacent coupling elements and at least some of said plates having elongated windows and first and second end portions, said end portions of each of said plates being different from each other at least at the inner side of the chain and at least in regions adjacent the ends of the respective windows, said coupling elements extending through the windows of the respective plates.
2. A link chain, comprising:
a plurality of pairs of neighboring composite links, the links of each pair being pivotable relative to each other and each link including a stack of plates; and
a plurality of coupling units, one for each pair of links and each pivotably connecting the respective pair of links, each of said units including at least two adjacent coupling elements and at least some of said plates having windows for the respective coupling elements, at least some of said coupling elements being rockable about axes normal to the respective plates and having rounded external surfaces contacting rounded internal surfaces of the respective plates in said windows thereof, said rounded surfaces having radii of curvature and the ratio of the radii of curvature of said internal surfaces to the radii of curvature of said external surfaces being less than ten.
3. The link chain of claim 2, wherein said ratio is less than five.
4. The link chain of claim 2, wherein said ratio at least approximates two.
5. A link chain, comprising:
a plurality of pairs of composite links each having a first end and a second end, the links of at least one of said pairs respectively including first and second stacks of elongated

plates, the plates of one of said stacks having first lengths and the plates of the other of said stacks having second lengths and the plates of the other of said stacks having second lengths different from said first lengths;

and coupling units each having a plurality of coupling elements, each of said units articulately connecting one end of one link of a pair with one end of the other link of the respective pair.

6. A link chain, comprising:

a plurality of pairs of chain links each including a stack of plates, the plates of one link forming part of at least one of said pairs having a first chain pitch and the plates of the other link forming part of said at least one pair having a different second chain pitch; and

coupling means articulately connecting the plates of each pair with one another.

7. A link chain, comprising:

a plurality of pairs of neighboring composite links, the links of each said pair being movable to and from predetermined positions of at least substantial linear alignment with each other and each link including a stack of plates;

a plurality of coupling units, one for said each said pair of links and each pivotably connecting the respective pair of links to each other, each of said units including at least two adjacent coupling elements and at least some of said plates having windows for the respective coupling elements, at least one of said coupling elements being rockable relative to the respective plates and having an external surface contacting, under predetermined circumstances of use of the chain, first portions of internal surfaces of the respective plates in said windows thereof, said internal surfaces further having second portions and the stresses being applied to said second portions in actual use of the chain exceeding the stresses being applied to said first portions of said internal surfaces; and

at least one antijam device for each said pair of links, each of said devices including means for preventing movements of the respective pair of links to second positions from which the links are incapable of moving to their respective predetermined positions;

wherein at least one of said link of at least one of said pairs having projections at one end thereof, the links of said at least one pair being pivotable relative to each other from

first positions of at least substantial alignment with each other to and from second positions offset through a predetermined angle relative to said first positions and said projections engaging abutment means of the chain in said second positions of the links of said at least one pair;

wherein the plates of said at least one of said at least one pair of links have first lengths and the plates forming part of the other link of said at least one pair of links have second lengths different from said first lengths.

8. The link chain of claim 7, wherein the plates of said at least one link of said at least one pair of links have first chain pitches and the plates forming part of the other link of said at least one pair of links have second chain pitches different from said first chain pitches.

9. A link chain, comprising:
a plurality of pairs of chain links each including a stack of elongated plates; and
means for pivotably coupling the links of said pairs to each other, the plates of at least one of said links exhibiting a plurality of first characteristics including first lengths and first pitches p_1 and the plates of at least one other link exhibiting a plurality of second characteristics including second lengths and second pitches p_2 , at least one of said first characteristics being different from at least one of said second characteristics, the chain links of at least one of said pairs being pivotable relative to each other through a first maximum angle $\alpha_{\max 1}$, the chain links of at least one other of said pairs being pivotable relative to each other through a different second maximum angle $\alpha_{\max 2}$, and the ratio of said angles and said pitches satisfying the equation $\alpha_{\max 2} \geq p_2/p_1 \times \alpha_{\max 1}$.

10. The link chain of claim 7, wherein said abutment means has a first profile and said projections have second profiles complementary to said first profile;

wherein $\alpha_{\max 1}$ is between 15° and 25° .

11. A link chain, comprising:
a plurality of pairs of neighboring composite links, the links of each said pair being movable to and from predetermined positions of at least substantial linear alignment with each other and each link including a stack of plates;

a plurality of coupling units, one for said each said pair of links and each pivotably connecting the respective pair of links to each other, each of said units including at least two adjacent coupling elements and at least some of said plates having windows for the respective coupling elements, at least one of said coupling elements being rockable relative to the respective plates and having an external surface contacting, under predetermined circumstances of use of the chain, first portions of internal surfaces of the respective plates in said windows thereof, said internal surfaces further having second portions and the stresses being applied to said second portions in actual use of the chain exceeding the stresses being applied to said first portions of said internal surfaces; and

at least one antijam device for each said pair of links, each of said devices including means for preventing movements of the respective pair of links to second positions from which the links are incapable of moving to their respective predetermined positions;

wherein said links include first, second, third and fourth links; and the plurality of coupling units includes

first, second and third coupling units movably connecting said first and second, said second and third and said third and fourth links to each other, each of said units including at least one coupling element and said plates having windows through which the respective coupling elements extend, said coupling elements being arranged to move during movement of said links of the respective pairs of links relative to each other;

wherein said plates have at least partially rounded internal surfaces bounding the respective windows and said coupling elements have at least partially rounded external surfaces arranged to contact the respective internal surfaces in predetermined positions of the respective pairs of links relative to each other, said rounded external surfaces having first radii of curvature and said rounded internal surfaces having second radii of curvature less than ten times said first radii of curvature.

12. The link chain of claim 11, each of said first radii of curvature at least approximates one-half of one of said second radii of curvature.

13. A method of assembling a link chain, particularly for use in a continuously variable transmission, comprising the steps of:

articulately connecting pairs of composite elongated links to each other for pivotal movement about axes extending transversely of the respective elongated links; and at least one of the following additional steps:

(a) limiting the extent of pivotability of the links of at least one of said pairs relative to each other; and

(b) counteracting the tendency, if any, of links of at least one of said pairs to wobble with respect to each other;

wherein said connecting step includes connecting pairs of dissimilar links to each other.